

WHAT IS CLAIMED IS:

1. A spinning reel reciprocating mechanism for axially reciprocating a spool in cooperation with rotation of a handle, the spool being mounted fore-end wise  
5 on a spool shaft, the spinning reel reciprocating mechanism comprising:  
a reel unit on which the handle and the spool shaft are furnished;  
a sliding member adapted to be mounted on the spool shaft immovably relative to the spool shaft at least in the spool shaft axial direction;  
shifting means for reciprocating said sliding member in the spool shaft axial  
10 direction in cooperation with rotation of the handle; and  
at least one guide shaft adapted to be supported by said reel unit in a plurality of locations on an outer circumferential surface of said guide shaft for guiding said sliding member in a direction substantially parallel to the spool shaft, said guide shaft having a position-restricting portion for preventing said guide shaft from being  
15 disengaged from said reel unit in at least one axial direction of said guide shaft.

2. The spinning reel reciprocating mechanism as set forth in claim 1, wherein:  
said reel unit has a plurality of support portions that are formed thereon so as  
20 to be aligned, said guide shaft being inserted along the axial direction of said guide shaft, through said plurality of support portions such that an outer surface of said guide shaft is entirely circumferentially supported by said plurality of support portions; and

said position-restricting portion includes an annular groove formed on said  
25 outer circumference of said guide shaft and a retainer member detachably and reattachably fitted to said annular groove, said retainer member contacting a side of one of said plurality of support portions opposite a side from which said guide shaft is inserted, such that disengagement of said guide shaft from said support portions is prohibited in a direction opposite the direction in which said guide shaft is inserted  
30 into said support portions.

3. The spinning reel reciprocating mechanism as set forth in claim 2, wherein

said retainer member is a snap ring detachably and elastically locked in said annular groove.

4. The spinning reel reciprocating mechanism as set forth in claim 2,  
5 wherein

said retainer member is a retaining spring formed by bending a metal wire into a hairpin contour, and locked detachably and elastically in said annular groove.

5. The spinning reel reciprocating mechanism as set forth in claim 1,  
10 wherein:

said reel unit includes a reel body having a housing space in the interior thereof, and a lid member detachably fixed to said reel body and closing said housing space; and

said position-restricting portion includes an annular groove formed on an outer  
15 circumference of said guide shaft and a plate-shaped member having a U-shaped groove that is detachably and reattachably fitted to said annular groove, said plate-shaped member being pressed toward said guide shaft by said lid member.

6. The spinning reel reciprocating mechanism as set forth in claim 2,  
20 wherein

said retainer member is contacting one of said plurality of support portions on a side closer to a side of said reel unit on which fishing line is reeled out.

7. The spinning reel reciprocating mechanism as set forth in claim 2,  
25 wherein

said reel unit further includes a positioning boss,

said guide shaft comes into contact with said positioning boss when said guide shaft is inserted from the rear of said reel unit, such that an insertion-direction position of said guide shaft is determined.

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8. The spinning reel reciprocating mechanism as set forth in claim 2,  
wherein:

said guide shaft has an interlocking portion formed at an insertion-direction

rear end portion, said interlocking portion interlocking with one of said plurality of support portions that is at rearmost end in the insertion direction; and

by interlocking of said interlocking portion into said support portion, an insertion-direction position of said guide shaft is determined.

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9. The spinning reel reciprocating mechanism as set forth in claim 1, wherein:

said reel unit has a plurality of support portions that are formed thereon and aligned along an axial direction, said guide shaft being inserted, along the axial  
10 direction of said guide shaft, through said plurality of support portions such that an outer surface of said guide shaft is entirely circumferentially supported by said plurality of support portions; and

said position-restricting portion includes two annular grooves and two snap  
rings that are detachably and reattachably fitted to said annular grooves, said snap  
15 rings contacting both side surfaces of one of said plurality of support portions, such that said support portion is sandwiched by said snap rings, and disengagement of said guide shaft from said support portion is prevented in either axial direction.

10. The spinning reel reciprocating mechanism as set forth in claim 1,  
20 wherein

said sliding means includes

a rotating member having a cam, said rotating member being adapted  
to rotate around an axis substantially parallel to a rotational axis  
of the handle, in cooperation with rotation of the handle, and  
25 a cam-engaging groove provided on said sliding member and  
extending in a direction intersecting a direction of the spool  
shaft, said cam-engaging groove engaging said cam.

11. The spinning reel reciprocating mechanism as set forth in claim 1,  
30 wherein

said shifting means includes

a worm shaft disposed substantially parallel to the spool shaft,  
intersecting spiral grooves being formed on a surface of said

worm shaft;  
an intermediate gear fixedly coupled to said worm shaft, said  
intermediate gear transmitting rotation of the handle to said  
worm shaft; and  
5 an engaging member pivotably accommodated in said sliding member  
and engaging said worm shaft.

12. A spinning reel, comprising:  
a reel unit provided with a handle and a spool shaft;  
10 a rotor supported so as to be rotatable around said spool shaft;  
a spool arranged in front of said rotor for winding fishing line, said spool  
being mounted fore-end wise on said spool shaft;  
a sliding member adapted to be mounted on the spool shaft immovably  
relative to the spool shaft at least in the spool shaft axial direction;  
15 shifting means for reciprocating said sliding member in the spool shaft axial  
direction in cooperation with rotation of the handle; and  
at least one guide shaft adapted to be supported by said reel unit in a plurality  
of locations on an outer circumferential surface of said guide shaft for guiding said  
sliding member in a direction substantially parallel to said spool shaft, said guide shaft  
20 having a position-restricting portion for preventing said guide shaft from being  
disengaged from said reel unit in at least one axial direction.

13. The spinning reel as set forth in claim 12, wherein:  
said reel unit has a plurality of support portions that are formed thereon so as  
25 to be aligned, said guide shaft being inserted, along the axial direction of said guide  
shaft, through said plurality of support portions such that an outer surface of said  
guide shaft is entirely circumferentially supported by said plurality of support  
portions; and  
said position-restricting portion includes an annular groove formed on said  
30 outer circumference of said guide shaft and a retainer member detachably and  
reattachably fitted to said annular groove, said retainer member contacting a side of  
one of said plurality of support portions opposite a side where said guide shaft is  
inserted, such that disengagement of said guide shaft from said support portions is

prohibited in a direction opposite the direction in which said guide shaft is inserted into said support portions.

14. The spinning reel as set forth in claim 13, wherein  
5 said retainer member is a snap ring detachably and elastically locked in said annular groove.

15. The spinning reel as set forth in claim 13, wherein  
said retainer member is a retaining spring formed by bending a metal wire into  
10 a hairpin contour, and locked detachably and elastically in said annular groove.

16. The spinning reel as set forth in claim 12, wherein:  
said reel unit includes a reel body having a housing space in the interior  
thereof, and a lid member detachably fixed to said reel body and closing said housing  
15 space; and  
said position-restricting portion includes an annular groove formed on an outer  
circumference of said guide shaft and a plate-shaped member having a U-shaped  
groove that is detachably and reattachably fitted to said annular groove, said plate-  
shaped member being pressed toward said guide shaft by said lid member.

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17. The spinning reel as set forth in claim 13, wherein  
said retainer member is contacting one of said plurality of support portions on  
a side closer to a side of said reel unit on which fishing line is reeled out.

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18. The spinning reel as set forth in claim 13, wherein  
said reel unit further includes a positioning boss,  
said guide shaft comes into contact with said positioning boss when said guide  
shaft is inserted from the rear of said reel unit, such that an insertion-direction  
position of said guide shaft is determined.

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19. The spinning reel as set forth in claim 13, wherein:  
said guide shaft has an interlocking portion formed at an insertion-direction  
rear end portion, said interlocking portion interlocking with one of said plurality of

support portions that is at rearmost end in the insertion direction; and

by interlocking of said interlocking portion into said support portion, an insertion-direction position of said guide shaft is determined.

5           20.     The spinning reel as set forth in claim 12, wherein:

              said reel unit has a plurality of support portions that are formed thereon and aligned along an axial direction, said guide shaft being inserted, along the axial direction of said guide shaft, through said plurality of support portions such that an outer surface of said guide shaft is entirely circumferentially supported by said  
10    plurality of support portions; and

              said position-restricting portion includes two annular grooves and two snap rings that are detachably and reattachably fitted to said annular grooves, said snap rings contacting both side surfaces of one of said plurality of support portions, such that said support portion is sandwiched by said snap rings, and disengagement of said  
15    guide shaft from said support portion is prevented in either axial direction.

              21.     The spinning reel as set forth in claim 12, wherein  
              said sliding means includes

                  a rotating member having a cam, said rotating member being adapted  
20                to rotate around an axis substantially parallel to a rotational axis  
                  of said handle, in cooperation with rotation of said handle, and  
                  a cam-engaging groove provided on said sliding member and  
                  extending in a direction intersecting a direction of said spool  
                  shaft, said cam-engaging groove engaging said cam.

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              22.     The spinning reel as set forth in claim 12, wherein  
              said shifting means includes

                  a worm shaft disposed substantially parallel to said spool shaft,  
                  intersecting spiral grooves being formed on a surface of said  
30                worm shaft;  
                  an intermediate gear fixedly coupled to said worm shaft, said  
                  intermediate gear transmitting rotation of said handle to said  
                  worm shaft; and

an engaging member pivotably accommodated in said sliding member  
and engaging said worm shaft.